Technical Review No. 3
Dakotas Wind Transmission Study
HDR / Western Area Power Administration
Billings, Montana
July 26-27, 2005

Cristy Hoferer (HDR) opened with a welcome. The attendees and agenda are listed below.

Task 1 – Analyze Non Firm Transmission Potential Relative to New Wind Generation

Don Martin (ABB) presented the final draft report for Task 1. It was noted that the values for each site were actually slightly higher than 500 MW. This was due to the methodology of adding the best wind rates in each studied region until at least 500 MW was achieved. An explanation will be added to the text regarding the installed wind capacity in tables 2.2.1 and 2.2.2. Labels will be added to the wind zones on the map, similar to those in the Task 3 report. An important note to be emphasized is that the results in Task 1 are based upon system intact conditions. The summary for results section will revised to clarify high hydro and low hydro results and the section number will be corrected.

Task 3 and 4 – Interconnection Study and Delivery Study

Don Martin (ABB) presented Task 3 and Task 4 together. Task 3 relates to an interconnection study and determines the local system requirements; whereas Task 4 analyzes the transfer capability and regional stability performance.

In Task 3, all eight scenarios were analyzed. A description of case names will be included in the final report. Line overloads are compared to both summer and winter ratings since they differ. In all scenarios, the new overloads or substantial increases in overloading above the MAPP base were noted. It was determined that for both the Mission and New Underwood sites, the transmission lines in Nebraska need to be monitored since power will flow in that direction. Also, contingencies creating major overloads will be identified.

Task 4 studied the regional stability for all eight scenarios. It was noted that for the 3 sites in North Dakota, the load was increased while leaving NDEX set at 1950, while the South Dakota sites were done by increasing generation. This resulted in a table showing that less generation can be added to the South Dakota sites. The solution is to run all sites in both ways to get a fair comparison.

Based upon the scope, four sites will be studied further with new transmission to increase the amount of new wind generation which can be added to each site. The four sites are Garrison, Ellendale, Mission and White. In order to "build upon prior related technical study work," some previously acknowledged area improvements will be investigated. Three such lines include a 345 kV transmission line from White to Blue Lake, a 345 kV transmission line from Maple River to Benton County and the line from Ellendale to Watertown to Blue Lake. Also, a 230 kV line from Mission to Oahe will also be studied. Ed Weber (WAPA) will assist Don Martin by providing line parameters.

For the reports for Tasks 3 and 4, it was determined that a brief description of MUST should be added to the Appendix. In addition, a brief description of dynamic rating should be added. A general discussion needs to be included for the other constraints which exceed the MAPP planning committee setting of less than 5% impact.

Task 2 – Assess Potential of Transmission Enhancement Technologies

This task was completed after Tasks 3 and 4 since the outage conditions are required to select appropriate enhancements. The enhancements for steady-state included the addition of series capacitors, phase shifting transformers, reconductoring transmission lines and dynamic line ratings. Enhancements for stability included both conventional and controllable series capacitors, SVC's or STATCOMs and phase shifting transformers.

The thermal rating for the Pickert site could be adjusted since the line runs across corn fields and is generally unobstructed.

Reports

Also, it was felt that the Executive Summary should include an explanation of the key assumptions, methods, results, and conclusions which is clear to all readers, especially the non-technical ones. The technical details are still important in the report body to satisfy the technical readers. A number of review participants stressed that all sections for all tasks need to be carefully reviewed for clarity and accuracy of the description of assumptions, methods, results and conclusions.

Due to additional work identified, the revised drafts for Tasks 1, 3 and 4 will be sent out later in August. An initial report for Task 2 will also be sent out in August. A conference call is tentatively set for 8:30 A.M., MDT on Tuesday, September 13, 2005.

As previously noted in earlier sessions, the participants agreed to avoid confusion and misinterpretation with this draft information which are still undergoing substantial changes by delaying their posting to the DWTS website.

Participants

Cristy Hoferer, HDR/Western Area Power Administration
Matt Schuerger, ESCS/HDR/Western Area Power Administration
Sam Miller, Western Area Power Administration
Brian Parsons, National Renewable Energy Laboratory
Larry Schedin, LLS Resources /Wind-on-Wires
Ray Brush, Northwestern Energy
Matthew Stoltz, Basin Electric Power Cooperative
Don Martin, ABB
Bob Gough, Intertribal COUP
Tom Wind, Wind Utility Consulting / Intertribal COUP
Michael Brower (By telephone), AWS TrueWind
Steve Wegman (By telephone), South Dakota Public Utilities Commission

DAKOTAS WIND TRANSMISSION STUDY
AGENDA

July 26-27, 2005 Technical Review Session
Boothill Inn, Billings MT

I. INTRODUCTION – 1:30 p.m.

A. Technical Review Session Participants
B. Review Minutes of last Technical Review Session

II. REVIEW OF TASK 1 RESULTS: Analyze Non-Firm Transmission Potential Relative to New Wind Generation – Don Martin

A. Gridview Transmission Constraint Evaluation Results – Don Martin
B. Comments on Final Report – Don Martin

III. REVIEW OF TASK 3 & 4 RESULTS – System Impact Study and Transfer Capability Study

A. Study Results of Site System Impact Studies – Don Martin
B. Study Results of Transfer Capability Studies – Don Martin

IV. TASK 2 – ASSESS POTENTIAL OF TRANSMISSION ENHANCEMENT TECHNOLOGIES

A. Results from Site Impact Study for Evaluation
B. Results from Transfer Capability Study for Evaluation

V. REVIEW OF SCHEDULE

A. Study Schedule
B. Final Report Dates

V. Adjourn